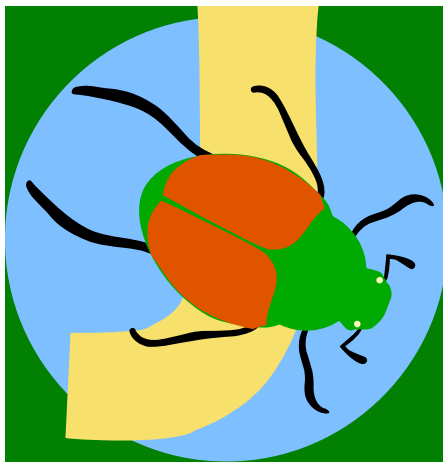


2007

Japanese Beetle Eradication Program

Palisade, CO



Summary and Final Report

by

Debbie Bulmer, Coordinator

Presented

November 15, 2007

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Introduction

The Japanese beetle (*Popillia japonica*) is a scarab beetle native to the main island of Japan. There are no known naturally occurring enemies in the U.S., and since its accidental introduction in 1916 it has become a serious *invasive* pest of turf and ornamentals in the eastern United States. Despite fifty years of concerted federal and state efforts to eradicate the beetle or at least limit its spread from Eastern States, in the past three decades the beetle has made a damaging sweep westward. The Plant Protection and Quarantine (PPQ) unit of the USDA Animal and Plant Inspection Services (APHIS) actively manages a program to intervene in the “artificial spread”, such as by commercial aircraft, from the Eastern United States to nine “protected Western States” which includes Colorado. The implementation of Palisade’s Japanese beetle eradication program safeguards our area of Colorado from being quarantined and potentially regulated by the USDA.

The Japanese beetle was first observed in Palisade in 2002. In 2003 the Colorado Department of Agriculture (CDA) instituted a mass trapping program in Palisade to determine the extent of a potential infestation. Since 2004 an Eradication Program, the elements of which include monitoring and destruction by *mass trapping* of adult beetles, destruction by the use of *insecticides*, and the encouragement of *lawn dry-down* by residents to reduce the chances of egg survival, has been in place.

Procedures

PROGRAM SUPPORT – The Japanese Beetle Program was supported by funding from the Upper Grand Valley Pest Control District (approx. \$12,000) and a \$6000 grant from the Colorado Department of Agriculture (CDA). Traps, lures, GIS support and office space were donated by the CDA. A cell phone, laptop computer and vehicle were provided by the Mesa County Division of Pest Management. The Town of Palisade provided a drop-off point for permission slips, treatment of Town parks, and a place to post information about the program.

PERMISSION SLIPS – The season began with two public presentations by Judith Sirota, Mesa County Pest Inspector, to elicit continued public and governmental support for the eradication program: a presentation to Mesa County Commissioners on May 7, 2007 which resulted in Resolution MCM 2007-054, and a presentation to the Palisade Board of Trustees on March 27 which resulted in Resolution No. 2007-11.

In early April a mass mailing was sent, inviting residents to a Japanese Beetle Advisory Committee Open House at The Palisade Community Center on April 25. The invitation also included a copy of the 2007 Permission Slip. A letter of appreciation along with 2007 permission slips had previously been mailed in October, 2006 to all residents in participating neighborhoods; 60, or approximately 20%, of these pre-signed permission slips had returned by mid-April .

TRAPS – Three *core infested areas* were identified based on trap data from 2004-2006 (Figure 1). On May 24, 2007 trap placement began in these core areas. Neighborhoods in the core and elsewhere in Palisade were canvassed door-to-door over the next few weeks for additional participants. Three traps were placed at properties outside Palisade: one at a residence near 33 and D ½ Roads in Clifton, one at a farm south of the Palisade Cemetery several miles west of town, and a peach orchard on Orchard Mesa a few miles southeast of town on 39 Road. Ultimately **380 traps** (Figure 2) were hung at locations as identical as possible to the trap locations of 2006 and prior years.

Procedures as described in the *Trapping Protocol for Japanese Beetle* (Jason Bishop, CSU Department of Bioagricultural Sciences and Pest Management) were utilized. Traps previously provided by a joint effort of the Colorado Department of Agriculture (CDA) and USDA-APHIS and manufactured by Trece Inc. were utilized. All traps were baited with a ‘double disc’ of floral compound and a JB specific sex pheromone known as Japonilure. The floral lure utilized in 2007 was constructed of a 3/8 inch thick, blotter paper disc as opposed to the saucer-shaped hardened foam disc which was utilized in previous years. The pheromone has been proven to increase capture of adult males, while the floral scent is equally attractive to both sexes. Both lures were replaced in mid-July subsequent to lawn and foliar treatments. Traps were usually hung from deciduous trees or fences 3-5 feet above lawns and near roses or Virginia creeper vines where present in the landscape. Traps in core

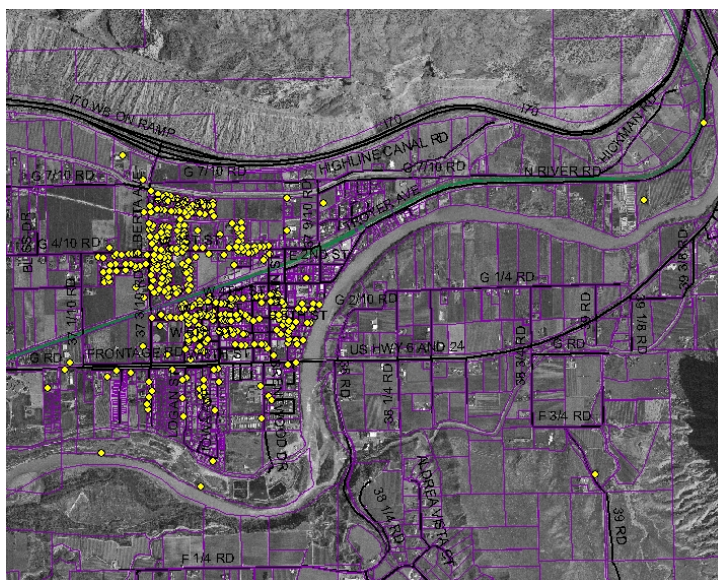


Figure 2. Trap locations in Palisade and surrounding area.

INSECTICIDE APPLICATION – R.E. Landscape Services of Grand Junction, as in 2006, applied insecticides to residential properties in Palisade. Palisade Public Works personnel treated the Palisade Peach Bowl Park and Veteran’s Memorial Park lawns. Granular imidacloprid (Merit™ 0.5G) previously donated by the Bayer Corporation was utilized for larval lawn treatments.

MERIT™ APPLICATION – Of Palisade’s estimated 700 irrigated lawns, 198 lawns in the two core areas were treated with Merit™ 0.5G by mid-July. The larvicide was applied by R.E. Landscape Services using Lesco rotary push spreaders and a riding spreader. The treatment began on July 5th; due to holiday travel conflicts for nine residents, the contractor returned on July 12th to finish the job. Palisade Public Works personnel completed treatment at the Palisade Peach Bowl and Veteran’s Memorial Park lawns on July 17th. The larvicide was applied at a rate of 1.4 oz /1000 ft². Notification door-hangers were distributed by the contractor after the application instructing homeowners to water in the chemical for approximately 1 hour, or about ¾” deep.

ONYX™ APPLICATION –Bifenthrin insecticide, a synthetic pyrethroid contact and ingestion insecticide, was substituted for Tempo™ by the commercial spray contractor and approved by the County Pest Inspector. Foliar applications of Onyx™ were applied to Virginia creeper vines at residential properties in the core area where adult beetles were

captured in 2006. Onyx™ was applied with ground spray equipment by R.E. Landscape Services on July 12th to 39 residences in *core neighborhoods* where beetles had been captured in 2006. Six gallons of spray were applied at a rate of 24 ml in 4 gallons of water. Because no Japanese beetles were being caught on the far west end of Fifth Street nor at the swimming pool fencelines, the Virginia creeper at the Palisade Peach Bowl Park were NOT sprayed as they had been in 2006.

Results

MASS TRAPPING – Total trap count for the 2007 season was 47 adult Japanese beetles (Figure 3, Table 1). This number represents a 29% reduction from 2006 and a 96% reduction since 2003. No Japanese beetles were captured outside the Town of Palisade. The first beetle, a male, was captured June 27th at a residence (343 W. Fifth Street) in the *downtown core*, and the last beetle, also a male, was trapped across the street at 338 W. Fifth on August 29th (Table 1). The peak adult flight occurred in mid-July with the capture of 16 adult beetles (Figure 4). A mid-July peak beetle flight appears to be consistent with previous years (Figure 5).

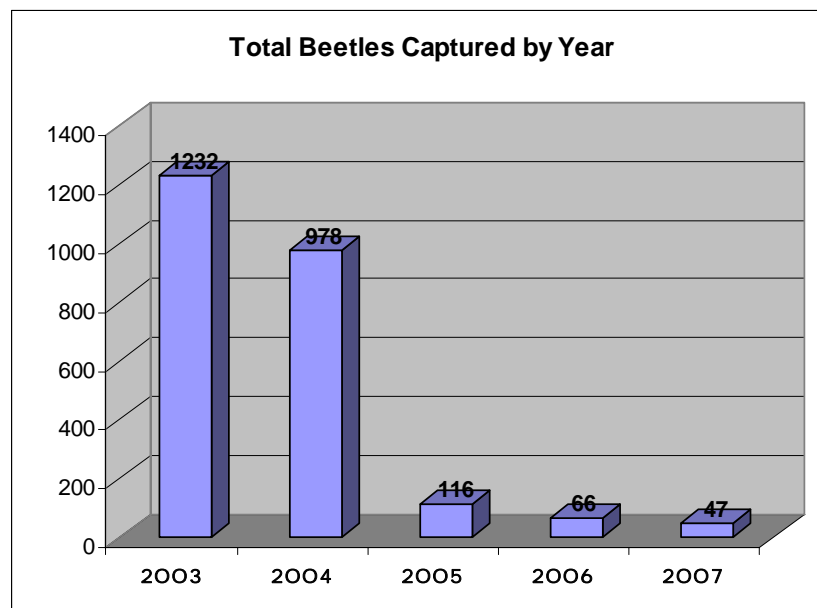


Figure 3. Trap catch since 2003.

ADDRESS	NOTES	SET DATE	Jun/11/07	Jun/18/07	Jun/25/07	Jul/02/07	Jul/09/07	Jul/16/07	Jul/23/07	Jul/30/07	Aug/06/07	Aug/13/07	Aug/20/07	Aug/27/07	Sep/03/07	Sep/10/07	Sep/17/07	Sep/24/07	2007 TOTAL
113 SUNSET CIR	Merit-D nyx	24-May	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
383 W 1ST ST	none	4-Jun	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
558 W 1ST ST	Merit-D nyx	4-Jun	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
131 ELBERTA	Merit	19-Jun	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
364 W 4TH ST	none	30-May	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
338 W 5TH ST	Merit-D nyx	7-Jun	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
343 W 5TH ST	Merit-D nyx	30-May	0	0	1	1	2	2	1	0	0	0	0	0	0	0	0	0	7
350 W 5TH ST	Merit-D nyx	3-Jul				0	1	0	0	0	0	0	0	0	0	0	0	0	1
353 W 5TH ST	Merit-D nyx	29-Jun			0	0	0	3	1	1	1	0	0	0	0	0	0	0	6
363 W 5TH ST	Merit-D nyx	2-Jul				0	0	0	2	0	0	0	0	0	0	0	0	0	2
365 W 5TH ST	Merit-D nyx	30-May	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
379 W 5TH ST	Merit-D nyx	29-Jun				0	0	0	1	1	0	0	0	0	0	0	0	0	2
391 W 5TH ST	Merit-D nyx	29-Jun				0	0	0	1	0	0	0	0	0	0	0	0	0	1
392 W 5TH ST	Merit-D nyx	12-Jun	0	0	0	0	1	2	0	2	0	0	0	0	0	0	0	0	5
490 W 5TH ST	Merit	24-May	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
358 W 6TH ST	Merit	5-Jun	0	0	0	1	0	1	2	2	0	0	0	0	0	0	0	0	6
370 W 6TH ST	Merit	5-Jun	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
557 LOGAN	none	1-Jun	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3701 G ROAD	none	22-Jun			0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
101 W 8th ST	none	7-Jun		0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	3
548 ASPINAL	none	20-Jun		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2007 Weekly Total			0	0	1	3	6	17	9	7	2	0	1	1	0	0	0	0	47

Table 1. Summary of 2007 trap data. Properties on Sunset, West First, Fourth, Fifth and Sixth Streets are in the Palisade core areas.

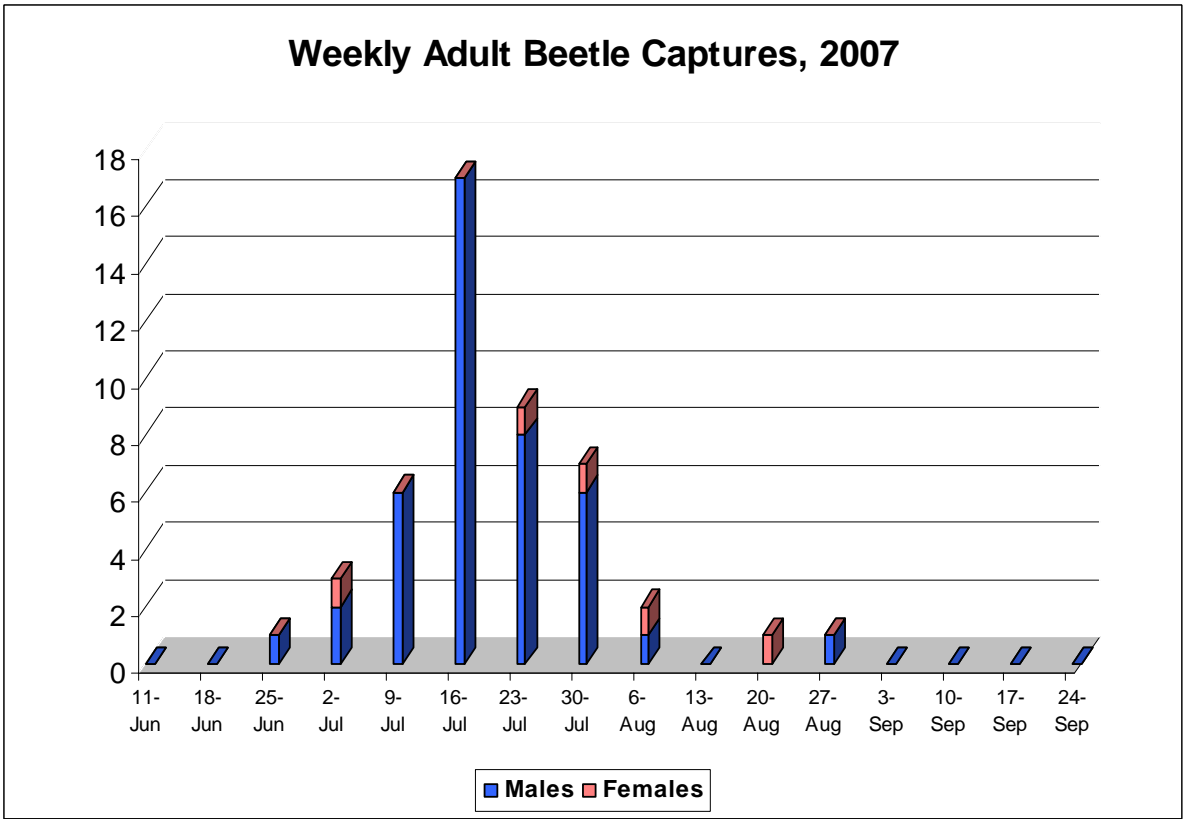


Figure 4. The peak adult flight occurred in mid-July.

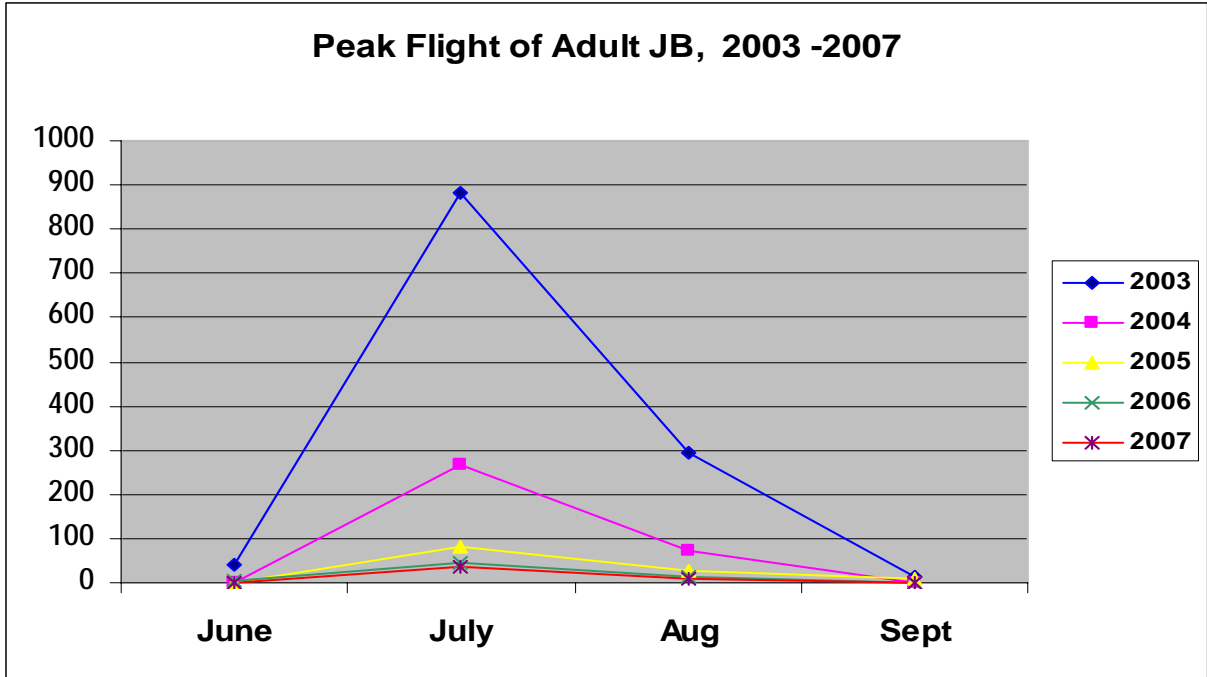


Figure 5. Adult Japanese beetle flight pattern is consistent from year to year.

Figure 6. Trap capture data for 2007

Japanese Beetle Trap Catch 2007



Although the data indicate a step forward towards eradication, there are several noteworthy elements. Especially noteworthy this year is: NO adult beetles were captured in traps on Crawford, Majestic, Rosa, nor Milleman streets. The number of beetles in the *northwest core* neighborhoods dropped dramatically this year with only four (4) adult beetles caught on West First, north Elberta and Sunset streets (Figure. 6, Table 1). This suggests that the foliar spray treatment at the Crawford addresses last year was a very important asset to the eradication program.

Conversely, thirty-six (36) adults were captured in the *downtown core area* of west Fourth, Fifth and Sixth Streets. A concentrated effort was made in the 300 block of west Fifth Street to enroll every property in the trapping and treatment program because of the high concentration of Virginia creeper vines on neighborhood fences. Sixteen of the eighteen property owners participated. Of these sixteen, all received Merit lawn treatment and ten (10) received an additional Onyx™ foliar spray treatment. Three of the residences on West Fifth (333, 343 and 353 W. Fifth St.) had received foliar Tempo™ spray as well as Merit in 2006. However, relatively large number of beetles (13 total) were nevertheless again captured on these properties in 2007.

Three (3) errant males were found in a trap at 3701 G Road (Meadery of the Rockies) and another four (4) were trapped in the southeast corner near Main and G Road (i.e., 101 W Eighth St. and 548 Aspinal Ct.). These were trapped in early- to mid-July when adults were at peak flight numbers. In 2003, 2004 and 2006 a trap at 548 Aspinal Ct. always captured at least one Japanese beetle.

Another element of surprise in this year's data is in the number of females captured. Of the 47 adult beetles captured, only five (5) were female (Figure 7). Since first noting the sex of captured adults in 2005, females have usually comprised roughly half the number of male beetles. In 2007, the number of females is surprisingly low.

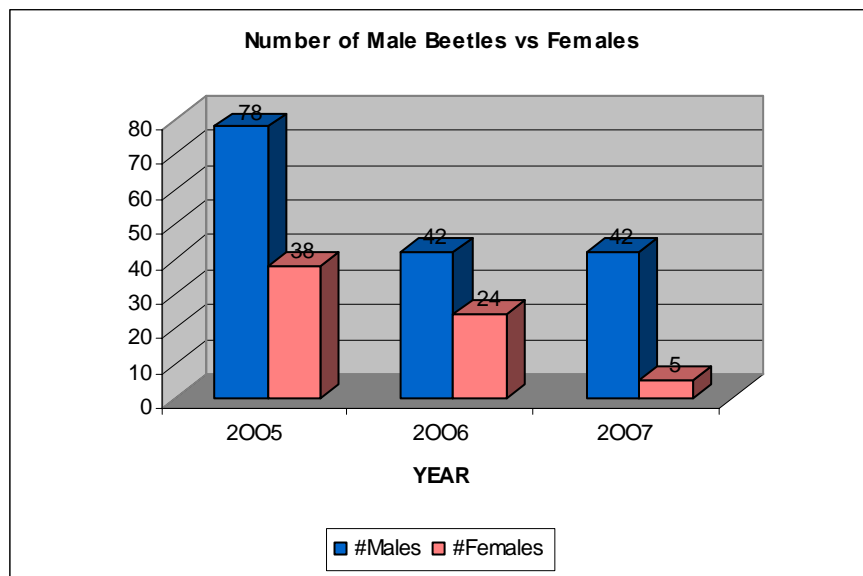


Figure 7. The relative proportion of female beetles in 2007 changed dramatically from previous years' captures.

As a foot note in regards the archived Japanese beetles held at the Palisade Insectary, eight (8) were donated to a proposed research project entitled "Japanese Beetle Stable Isotope Analysis" at the University of Utah. Dr. Dave Podlesak is the project coordinator. The proposal was submitted for funding approval as a cooperative relationship between the Utah Department of Agriculture and Food (UDAF), Oregon Department of Agriculture, Colorado Department of Agriculture, Isoforensics Inc., and the PPQ units of the USDA/APHIS.

DRY-DOWN – Encouraging homeowners to dry down lawns was an ongoing process. Most residents were familiar with this ‘extra precaution’ due to previous years’ efforts. The revised JAPANESE BEETLE INVADES PALISADE! pamphlet was distributed and discussed with many homeowners again in 2007. Despite written directions, there still remains confusion about watering lawns. A disparity in access to irrigation water in various neighborhoods results in some homeowners watering several times a week and others, with access only to expensive city water (in the older downtown areas), having dried out, weedy lawns. Landowners in the northwest portion of Palisade tend to water daily. Like St. Ann’s Church property where an automated sprinkler system is under the control of a lawn care professional, some owners are unable to easily change their automated water cycles.

INSECTICIDE – Merit™ was stored on a pallet over winter at the town of Palisade Public Works facility. There were 690 pounds (twenty-three 30# bags) of Merit™ remaining from 2006. This year a total of 585 pounds (19 ½ bags) were used: the Town of Palisade utilized 165 pounds (5 ½ bags) for the Palisade Peach Bowl Park and the Veterans’ Memorial Park and the contractor, R.E. Landscape Services, applied 420 pounds (14 bags) to residential properties. However, contractor crew experienced equipment problems during the first day whereby they noted that they were applying Merit at too low a rate, and returned the following day with recalibrated equipment to complete application in the *downtown core*. To date 3 ½ bags (i.e., 105 pounds) of Merit™ remain in storage at the Town of Palisade Public Works facility.

Discussion

The community of Palisade was very cooperative and supportive of continuing the Japanese beetle eradication effort. However, some are weary of the process and wonder how much longer this will take. In some cases it took over a month to obtain permission slips. There were a half dozen or so new homeowners who did not understand the Japanese beetle eradication program and required *educating*. Several homeowners voiced concern about insecticidal use: one whose child has Downs Syndrome; one who sells certified organic cotton clothing from home; several with chemical sensitivities; one who has grapes in his

lawns (and uses them to make his own wine); and one who is employed by another lawn care company and insisted he treat his own lawn.

Two homeowners refused lawn treatment. However, no evidence of lawn damage due to JB grubs was observed at these properties. Conversely, several homeowners wanted information about treating roses and other shrubs for the Japanese beetle even though they had not seen any at their properties. Copies of the Ohio State University Extension Fact Sheet (Appendix 4) which discusses homeowner cultural and chemical controls were distributed to a dozen or so homeowners. A JB fact sheet specific to Colorado may need to be developed because the Ohio Fact Sheet assumes a large established population, addresses more of a maintenance control program and also mentions nematodes and diseases as control options, which should not be relied upon in an eradication situation.

There were very few complaints about insecticide application by R.E. Landscape Services. One home owner, whose front yard is xeriscaped but who has a backyard lawn was inadvertently missed on July 10th. The contractor cheerfully returned a few days later to finish there. One homeowner claimed that flowers were trampled during the application, but declined to show me what had happened. Many participants were grateful for the free insecticidal treatments which provided other benefits to their lawns. Several who did not qualify for treatment in 2006 were disappointed they missed the free lawn treatment. A Thank You letter and a 2008 permission slip have been mailed to all 2007 participants.

In 2008 another Public Relations campaign with Palisade residents is recommended. Properties are continually being bought and sold, so there is a need for continued education and one-on-one contact with new property owners. As some residents grow weary of the program and the coordinator's weekly visits, a new effort to revitalize interest is needed. An updated brochure describing lawn and soil drench treatments as well as the achievements in the eradication process is needed. Monthly articles beginning in April or May in the local newspaper, including a copy of the permission slip (as was done in 2004) is needed. A description of beetle biology, lawn care, the economic impact to Palisade of an *established infestation*, and phases and progress in the eradication program through out the summer should be included.

An announcement at the start of the season and updates about the eradication program could be included in the quarterly Newsletter which the Town of Palisade publishes

and mails to residents. Outreach presentations at the local grade school with handouts including the 2008 permission slip could be conducted. Television news coverage in the spring would again be helpful. Updates about the eradication efforts on CSU Tri-River Extension radio broadcasts and web site would be helpful. A fresh Japanese beetle poster and a display of beetles at the local library or at the Town Hall have been suggested by residents. Richard Mathews, a former mayor, suggested that the Town of Palisade be asked to adopt a Resolution or Proclamation that all town residents are expected to participate in the Palisade Japanese Beetle Eradication Program. In general, we will need an aggressive Public Relations campaign in 2008.

In conclusion, the eradication program in Palisade is successful. The beetle population continues to be isolated to the west side of Palisade and numbers are declining. Although the beetle population is in decline, in order to achieve an *eradicated* status from the USDA, the program needs to incorporate the use of systemic insecticidal treatments on Virginia creeper vines as well as on lawns.

As the program looks to the future where the Upper Grand Valley Pest Control District and the Colorado Department of Agriculture withdraw from their management responsibilities, the residents of Palisade will need to be given information and support from the Tri-River Extension offices on how to combat any errant Japanese beetles that return. The need for an exit strategy is soon at hand.

I wish to thank the people of Palisade who by and large have a wonderful attitude about our program. Many thanks to the staff of the Colorado Department of Agriculture for providing the space, equipment, lures, and ideas for the Japanese beetle eradication program. I look forward to being involved in monitoring the situation in future years.

Debbie Bulmer

Appendix 1

Members of the

2007 Palisade, CO. Japanese Beetle Eradication Committee

- Brant Harrison, Kokopelli Produce, chairperson
- Jerry Cochran, Colo. Dept. of Agriculture
- Andrea Judson, Palisade Insectary, Colo. Dept. of Agriculture
- Bob Hammon, CSU Extension, Entomologist
- Fesalene Ashurst, Town of Palisade
- Susan Rose, CSU Extension, Horticulture Tech.
- Curtis Swift, CSU Extension, Horticulture
- Galen Wallace, Town of Palisade Trustee
- Jude Sirota, Mesa Co. Pest and Weed Inspector
- Mitch Yergert, Colo. Dept. of Agriculture
- Tom McKee, Palisade Greenhouse
- Bruce Talbott, Talbott Farms

Appendix 2

Donations and Supporters – THANK YOU!

- Town of Palisade
- Colorado State University Tri-River Area Extension
- Colorado Department of Agriculture
- Colorado Department of Agriculture Palisade Insectary Staff, especially Sonya Ortega, Field Biologist and GIS Mapping Specialist
- Palisade Chamber of Commerce
- Mesa County Library – Palisade
- Bayer Corporation
- RE Landscape Services
- Lisa Peraino – APHIS/USDA
- Bob Hammon, CSU Tri-River Area Extension, Entomologist, and Melissa Franklin, Assistant
- Mesa County Division of Pest Management, Staff
- Upper Grand Valley Pest Control District

Appendix 3

Public Relations and Media Appearances

- 03/27/07 – Palisade Board of Trustees program review
- 04/05/07 – Palisade *Tribune*, article
- 04/19/07 – Palisade *Tribune*, article
- 04/25/07 – *Free Press*, Community Briefs announcement of Open House
- 04/25/07 – Japanese beetle Open House at Memorial Community Center
- 05/07/07 – Mesa County Board of Commissioners
- 05/07/07 – **KJCT** News
- 06/05/07 – *The Daily Sentinel*, article
- 07/05/07 – Palisade *Tribune*, article
- 07/24/07 – Eradication Program Summary Report to USDA
- 08/11/07 – *The Daily Sentinel*, Palisade Peach Festival program
- 08/19/06 – Palisade Peach Festival with CSU Tri River Area Extension
- **10/ /07** – Palisade *Tribune*
- (To Be Scheduled) – **Present results at Town Meeting**

Appendix 4

Publications and Information Handouts

- Ohio State University Extension FACT SHEET, HYG-2001-03
- Collage of Newspaper Articles

Addendum

Summary

By and large, residents of Palisade were very cooperative and supportive of the Japanese beetle eradication effort. There are always procrastinators, and in a few cases it took over a month to obtain permission slips. Asking people to return their signed permission slip as an enclosure with their Palisade water bill payment helped expedite the process. The town clerk and staff cheerfully retained signed permission slips until they could be retrieved by the program coordinator. There were a half dozen or so new homeowners who did not understand the Japanese beetle eradication program and required *educating* in person. The recently released CSU Extension Fact Sheet No. 5.601 was particularly helpful here because of the beautifully photographed beetle comparisons and information about the variety of beetle grubs in Colorado. Several homeowners voiced concern about insecticidal use: several with chemical sensitivities and one who blamed insecticides for the loss of praying mantis in his yard. One resident on Crawford (#545) insisted on treating his own lawn, as he has in the past, over July 4th. However, no evidence of lawn damage due to grubs was observed at any of those properties which refused treatment. Conversely, several homeowners who did not qualify for lawn treatment were disappointed they missed a free lawn treatment. And this year, several homeowners in east and south neighborhoods of Palisade paid for insecticide treatments due to billbug and grub infestations. (However, no Japanese beetles were captured at traps on their or neighbors' lawns.)

In conclusion, the eradication program in Palisade continues to be successful. Overall, the beetle population is in decline. However, in order to achieve an *eradicated* status, the treatment program needs to incorporate insecticidal treatments on Virginia creeper vines and probably other ornamentals as well as on lawns. As in 2003 and 2004, the eradication program needs to be extended to include more, if not all, 700 or so properties within Palisade in the treatment plan to assure destruction of undetected, small pockets of evasive beetles.

As a footnote, eight (8) of our archived Japanese beetles were donated to a proposed research project entitled "Japanese Beetle Stable Isotope Analysis" at the University of Utah by Dr. Dave Podlesak, project coordinator. The proposal was submitted for funding approval as a cooperative relationship between the Utah Department of Agriculture and Food

(UDAF), Oregon Department of Agriculture, Colorado Department of Agriculture, Isoforensics Inc., and the PPQ units of the USDA and APHIS in 2008. It is hoped that data will provide insight into the point of origin of Japanese beetle infestations in the western United States.

I wish to thank the people of Palisade who by and large have a wonderful attitude about our program. I am indebted to the staff at Colorado State University Extension office for help with verifying the sex of Japanese beetles, with trap management and for allowing me to occupy booth space at the Palisade Peach Festival to promote public education about our beetle and about lawn care. Many thanks to the staff of the Colorado Department of Agriculture for providing the space, equipment, traps and lures, and ideas in the Japanese beetle eradication program. I look forward to being involved in monitoring the situation in 2008.

Debbie Bulmer